ELITE TEST - SERIES
For : JEE (MAIN) & PMT

Guided by :- **ELITE *Institute*©**
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PMT

TEST ID 000491002

MOCK TEST – 01

Time: 3 Hours *Maximum Marks: 720*

Syllabus Covered

Physics : *Full Syllabus*
Chemistry : *Full Syllabus*
Biology : *Full Syllabus*

Please read the instructions carefully. You are allotted 5 minutes specifically for this purpose.

☞ INSTRUCTIONS

A. General :

(i) There are three sections in this paper consisting of Physics & Chemistry having 45 questions each and Biology having 90 questions.

(ii) For each correct answer **4 marks** will be awarded and for each incorrect answer **one mark** will be deducted. No deduction from the total score will, however, be made if no response is indicated for an item in the answer sheet. More than one answer indicated a question will be deemed as incorrect response and will be negatively marked.

(iii) Mark only one correct answer out of four alternatives.

(iv) Use Blue/Black Ball Point Pen only for writing particulars/ or any marking.

(v) Use of calculator is not allowed.

(vi) Darken the circles in the space provided only.

(vii) Use of white fluid or any other material which damages the answer sheet, is not permitted.

B. Filling the OMR SHEET :

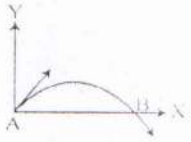
Please read carefully the instructions printed on the OMR SHEET before marking your response.

USEFUL CONSTANTS

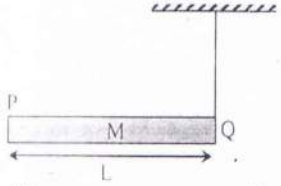
Boltzmann constant (k)	=	1.38×10^{-23} J K^{-1}	Avogadro's number (N_A)	=	6.02×10^{23} mol^{-1}
Planck's constant (h)	=	6.63×10^{-34} J s	Speed of light in vacuum (c)	=	3×10^{8} m s^{-1}
Rest mass of electron (me)	=	9.1×10^{-31} kg	1 unified atomic mass unit (u)	=	1.66×10^{-27} kg
1 eV	=	1.6×10^{-19} J	1 nm	=	10^{-9} m
Charge of Electron (e)	=	1.6×10^{-19} J	Gas constant (R)	=	8.31 J mol^{-1} K^{-1}

PART A : PHYSICS

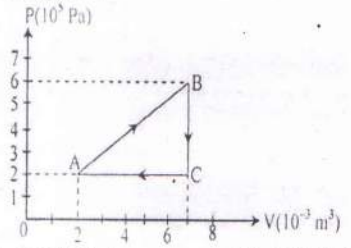
1. In an experiment four quantities a, b, c and d are measured with percentage error 1%, 2%, 3% and 4% respectively. Quantity P is calculated as follows: $P=\frac{a^3b^2}{cd}$. % error in P is-
   (a) 14% (b) 10%
   (c) 7% (d) 4%
2. A is $(2\hat{i}+3\hat{j})$m/s. Its velocity (in m/s) at point B is-



   (a) $-2\hat{i}-3\hat{j}$ (b) $-2\hat{i}+3\hat{j}$
   (c) $2\hat{i}-3\hat{j}$ (d) $2\hat{i}+3\hat{j}$
3. A stone falls freely under gravity. It covers distances h_1, h_2 and h_3 in the first 5 seconds, the next 5 seconds and the next 5 seconds respectively. The relation between h_1, h_2 and h_3 is –
   (a) $h_1 = 2h_2 = 3h_3$ (b) $h_1 = \frac{h_2}{3} = \frac{h_3}{5}$
   (c) $h_2 = 3h_1$ and $h_3 = 3h_2$
   (d) $h_1 = h_2 = h_3$
4. The upper half of an inclined plane of inclination θ is perfectly smooth while lower half is rough. A block starting from rest at the top of the plane will again come to rest at the bottom, if the coefficient of frictionbetween the block and lower half of the plane is given by –
   (a) $\mu = \frac{1}{\tan\theta}$ (b) $\mu = \frac{2}{\tan\theta}$
   (c) $\mu = 2\tan\theta$ (d) $\mu = \tan\theta$
5. An explosion breaks a rock into three parts in a horizontal plane. Two of them go off at right angles to each other. The first part of mass 1 kg moves with a speed of 12 ms^{-1} and the second part of mass 2 kg moves with 8 ms^{-1} speed. If the third part files off with 4 ms^{-1} speed, then its mass is -
   (a) 3 kg (b) 5 kg
   (c) 7 kg (d) 17 kg
6. A rod PQ of mass M and length L is hinged at end P. The rod is kept horizontal by a massless string tied topoint Q as shown in figure. When string is cut, the initial angular acceleration of the rod is –



   (a) $\frac{3g}{2L}$ (b) $\frac{g}{L}$
   (c) $\frac{2g}{L}$ (d) $\frac{2g}{3L}$
7. The molar specific heats of an ideal gas at constant pressure and volume are denoted by C_p and C_v, respectively. If $\gamma = \frac{C_p}{C_v}$ and R is the universal gas constant, then C_v is equal to –
   (a) $\frac{1+\gamma}{1-\gamma}$ (b) $\frac{R}{(\gamma-1)}$
   (c) $\frac{(\gamma-1)}{R}$ (d) γR
8. A gas is taken through the cycle A → B → C → A, as shown. What is the net work done by the gas ?



   (a) 2000 J (b) 1000 J
   (c) zero (d) −2000 J
9. A wave travelling in the +ve x-direction having displacement along y-direction as 1m, wavelength 2πm and

frequency of $\frac{1}{\pi}$ Hz is represented by -

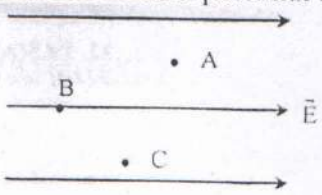
(a) $y = \sin(x - 2t)$

(b) $y = \sin(2\pi x - 2\pi t)$

(c) $y = \sin(1\pi\, \pi x - 20\pi t)$

(d) $y = \sin(2\pi x + 2\pi t)$

10. A, B and C are three points in a uniform electric field. The electric potential is –



(a) maximum at A (b) maximum at B

(c) maximum at C

(d) same at all the three points A, B and C

11. The internal resistance of a 2.1 V cell which gives a current of 0.2A through a resistance of 10Ω is -

(a) 0.2 Ω (b) 0.5 Ω

(c) 0.8 Ω (d) 1.0 Ω

12. A certain mass of Hydrogen is changed to Helium by the process of fusion. The mass defect in fusion reaction is 0.02866 u. The energy liberated per u is – (Given 1 u = 931 MeV)

(a) 2.67 MeV (b) 26.7 MeV

(c) 6.675 MeV (d) 13.35 MeV

13. The resistances of the four arms P, Q, R and S in aWheatstone's bridge are 10 ohm, 30 ohm, 30 ohm and 90 ohm, respectively. The e.m.f. and internal resistance of the cell are 7 volt and 5 ohm respectively. If the galvanometer resistance is 50 ohm, the current drawn from the cell will be -

(a) 1.0 A (b) 0.2 A

(c) 0.1 A (d) 2.0 A

14. A current loop in a magnetic field -

(a) experiences a torque whether the field is uniform or non-uniform in all orientations

(b) can be in equilibrium in one orientation

(c) can be in equilibrium in two orientations, both the equilibrium states are unstable

(d) can be in equilibrium in two orientations, one stable while the other is unstable

15. A wire loop is rotated in a magnetic field. The frequency of change of direction of the induced e.m.f. is -

(a) once per revolution

(b) twice per revolution

(c) four times per revolution

(d) six times per revolution

16. The condition under which a microwave oven heats up a food item containing water molecules most efficiently is -

(a) The frequency of the microwaves must match the resonant frequency of water molecules

(b) The frequency of the microwaves has no relation with natural frequency of water molecules

(c) Microwaves are heat waves, so always produce heating

(d) Infra-red waves produce heating in a microwave oven

17. For a normal eye, the cornea of eye provides a converging power of 40D and the least converging power of the eye lens behind the cornea is 20D. Using this information, the distance between the retina and the corneaeye lens can be estimated to be -

(a) 5 cm (b) 2.5 cm (c) 1.67 cm (d) 1.5 cm

18. A parallel beam of fast moving electrons is incident normally on a narrow slit. A fluorescent screen is placed at a large distance from the slit. If the speed of the electrons is increased, which of the following statements is correct ?

(a) Diffraction pattern is not observed on the screen in the case of electrons

(b) The angular width of the central maximum of the diffraction pattern will increase

(c) The angular width of the central maximum will decrease

(d) The angular width of the central maximum will be unaffected

19. In a n-type semiconductor, which of the following statements is true -

(a) Electrons are majority carriers and trivalent atoms are dopants

(b) Electrons are minority carriers and pentavalent atoms are dopants

(c) Holes are minority carriers and pentavalent atoms are dopants

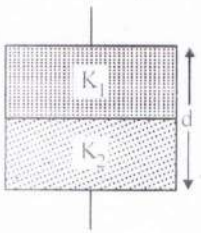
(d) Holes are majority carriers and trivalent atoms are dopants

20. In the formula $X = 3YZ^2$, X and Z have the dimensions of capacitance and magnetic induction, respectively. The dimensions of Y in M.K.S system are

(a) $M^{-3}L^{-2}T^{-2}A^{-4}$ (b) $M\,L^{-2}$Å

(c) $M^{-3}L^{-2}T^{8}A^{4}$ (d) $M^{-3}L^{-2}T^{4}A^{4}$

21. A parallel plate capacitor of plate area A. Separation d is filled with dielectrics as shown in figure. The dielectric constants are K_1 and K_2. Net capacitance is



(a) $\frac{A\varepsilon_0}{d}(K_1 + K_2)$ (b) $\frac{A\varepsilon_0}{d}\left(\frac{K_1 + K_2}{K_1K_2}\right)$

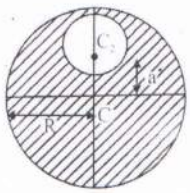
(c) $\frac{2A\varepsilon_0}{d}\left(\frac{K_1K_2}{K_1 + K_2}\right)$ (d) $\frac{2A\varepsilon_0}{d}\left(\frac{K_1 + K_2}{K_1K_2}\right)$

22. If a particle is moving on straight line and a constant instantaneous power is supplying on the particle then the displacement of particle as a function of time is

(a) $x = \left[\frac{1}{3}\left(\frac{3c}{m}\right)^{1/3} t\right]^{3/2}$ (b) $x = \left[\frac{5}{3}\left(\frac{3c}{m}\right)^{1/3} t\right]^{3/2}$

(c) $x = \left[\frac{2}{3}\left(\frac{3c}{m}\right)^{1/3} t\right]^{3/2}$ (d) $x = \left[\frac{10}{3}\left(\frac{3c}{m}\right)^{1/3} t\right]^{3/2}$

23. Consider a disc of radius R from which a small circular disc of radius r has been cut with its centre C_2 at a distance 'a' from the centre of the full disc. Calculate the moment of inertia of the holed disc about an axis perpendicular to the plane of the disc and passing through the centre C_2 of the circular hole. The mass of the circular disc without hole is M.



(a) $\frac{M}{2}\left[2R^2 + a^2 + \frac{r^4}{R^2}\right]$

(b) $\frac{M}{2}\left[R^2 + 2a^2 + \frac{r^4}{R^2}\right]$

(c) $\frac{M}{2}\left[R^2 + 2a^2 + \frac{R^2}{r^4}\right]$

(d) $\frac{M}{2}\left[R^2 + 2a^2 - \frac{r^4}{R^2}\right]$

24. A thin circular ring of mass m and radius R is rotating about it axis with a constant angular velocity ω. Two objects each of mass M are attached gently to the opposite ends of a diameter of the ring. The ring now rotates with an angular velocity ω' =

(a) $\frac{\omega(m + 2M)}{m}$ (b) $\frac{\omega(m - 2M)}{(m + 2M)}$

(c) $\frac{\omega m}{(m + M)}$ (d) $\frac{\omega m}{(m + 2M)}$

25. Gravitational potential due to a mass distribution is given by $V = (x^2y + y^2z)$. The gravitational field can be expressed as

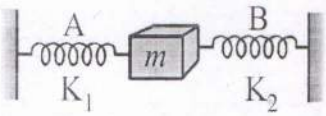
(a) $-\left[2xy\hat{i}+\left(x^2+2yz\right)\hat{j}+y^2\hat{k}\right]$

(b) $-\left(x^2\hat{i}+y^2\hat{j}+z^2\hat{k}\right)$

(c) $-\left(x\hat{i}+y\hat{j}+z\hat{k}\right)$

(d) $-\left[2xy\hat{i}+yz\hat{k}+zx\hat{k}\right]$

26. In arrangement given in figure, if the block of mass m is displaced, the frequency is given by



(a) $n=\frac{1}{2\pi}\sqrt{\left(\frac{K_1-K_2}{m}\right)}$

(b) $n=\frac{1}{2\pi}\sqrt{\left(\frac{K_1+K_2}{m}\right)}$

(c) $n=\frac{1}{2\pi}\sqrt{\left(\frac{m}{K_1+K_2}\right)}$

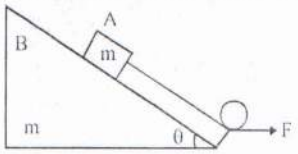
(d) $n=\frac{1}{2\pi}\sqrt{\left(\frac{m}{K_1-K_2}\right)}$

27. If 5 N force is acting on two bodies having mass m_1 kg and m_2 kg separately, then it produced acceleration 1 m/s^2 and $\frac{1}{2}$ m/s^2 respectively. If these bodies are combined together and same force is applied on that combined body, then acceleration of combined body is

(a) $\frac{1}{3}m/s^2$ (b) $5\ m/s^2$

(c) $\frac{1}{5}m/s^2$ (d) $\frac{2}{3}m/s^2$

28. A block A of mass m which is placed on a rough inclined surface of a wedge of same mass being pulled through light string and with force F as shown in figure. The coefficient of friction between inclined surface and block A is μ while there is no friction between the ground and wedge. If the whole system moves with same acceleration then the value of F will be



(a) $F<2mg\left(\frac{\mu\cos\theta-\sin\theta}{2-\cos\theta}\right)$

(b) $F<2mg\left(\frac{\mu\cos\theta+\sin\theta}{2+\cos\theta}\right)$

(c) $F<2\mu\ mg\tan\theta$

(d) $F<\mu\ mg\ \frac{\cos\theta}{(2-\sin\theta)}$

29. If the pole strength and length of a short magnet is known to be 48 A-m and 2cm respectively, then the magnetic potential at a point on its axis at a distance of 12 cm from its centre is

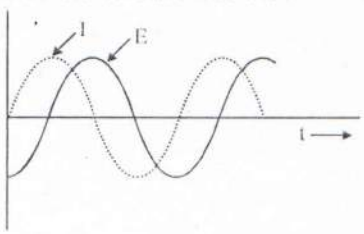
(a) 6.67×10^{-6} J/A-m

(b) 3.7×10^{-6} J/A-m

(c) 4.5×10^{-6} J/A-m

(d) 9.5×10^{-6} J/A-m

30. When an AC source of e.m.f. $E = E_0 \sin(100t)$ is connected across a circuit, the phase difference between the e.m.f. E and the current I in the circuit is observed to be $\pi/4$, as shown in the figure. If the circuit consists possibly only of R-C or R-L or L-C in series, the relation between the two elements of the circuit will be



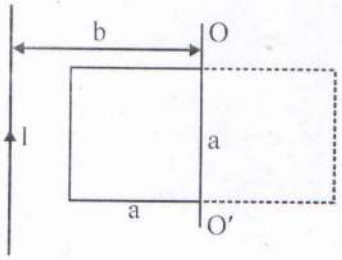
(a) $R = 1\ k\Omega, C = 10\mu F$

(b)R = 1 kΩ, C = 1μF

(c)R = 1 kΩ, L = 10 H

(d)R = 1 kΩ, L = 1 H

31. A square frame with side '*a*' and a straight conductor carrying current I are located in the same plane. The inductance and the resistance of the frame are equal to L and R respectively. The frame was turned through 180° about the axis OO' separated from the current carrying conductor by a distance *b*. What is the electric charge flown through the frame.



(a) $\frac{\mu_0 I}{4\pi R} ln\left(\frac{b+a}{b-a}\right)$

(b) $\frac{\mu_0 aI}{2\pi R} ln\left(\frac{b+a}{b-a}\right)$

(c) $\frac{2\mu_0 aI}{\pi R} ln\left(\frac{b+a}{b-a}\right)$

(d) $\frac{\mu_0 aI}{2\pi R} ln\left(\frac{b-a}{b+a}\right)$

32. The moment of inertia of a uniform semicircular disc of mass M and radius *r* about a line perpendicular to the plane of the disc through the centre is

(a) Mr^2 (b) $\frac{1}{2}Mr^2$

(c) $\frac{1}{4}Mr^2$ (d) $\frac{2}{5}Mr^2$

33. In Young's double slit experiment source emits light of wavelength 7000 Å. If distance between the two slits is 1 mm and distance between slits and screen is 1 metre, then distance between third dark and 5th bright fringe is

(a) 1.75 mm (b) 1.85 mm

(c) 0.875 mm (d) 1.75 cm

34. In a BJT, current amplification factor α is 0.9. If transistor is used in CE configuration then for a change of 0.4 mA in base current, change in collector current will be

(a) 0.9 mA (b) 4 mA

(c) 3.6 mA (d) 36 mA

35. In a P-N-P transistor, the collector current is 10 mA. If 90% of the holes reach the collector, then emitter current will be

(a) 10 mA (b) 11 mA

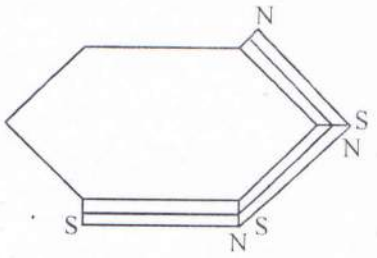
(c) 12 mA (d) 13 mA

36. A particle at the end of a spring executes S.H.M. with a period t_1, while the corresponding period for another spring is t_2. If the period of oscillation with the two springs in series is T, then

(a) $T^{-1} = t_1^{-1} + t_2^{-1}$ (b) $T^2 = t_1^2 + t_2^2$

(c) $T = t_1 + t_2$ (d) $T^{-2} = t_1^{-2} + t_2^{-2}$

37. Three identical thin bar magnets each of moment M are placed along three adjacent sides of a regular hexagon as shown in figure. The resultant magnetic moment of the system is



(a) M (b) $M\sqrt{3}$

(c) $M\sqrt{2}$ (d) 2M

38. A radioactive nucleus with Z protons and N neutrons emits an α-particle, 2β-particles and 2 gamma rays. The number of protons

and neutrons in the nucleus left after the decay respective, are

(a) Z–3, N–1 (b) Z–2, N–2

(c) Z–1, N–3 (d) Z, N–4

39. In semiconductor the concentrations of electrons and holes are $8 \times 10^{18}/m^3$ and $5 \times 10^{18}/m^3$ respectively. If the mobilities of electrons and holes are 2.3 m^2/volt-s and 0.01 m^2/volt-s respectively, then semiconductor is

(a) N-type and its resistivity is 0.34 ohm-metre

(b) P-type and its resistivity is 0.034 ohm-metre

(c) N-type and its resistivity is 0.034 ohm-metre

(d) P-type and its resistivity is 3.40 ohm-metre

40. Internal energy of two moles of an ideal gas at a temperature of 127°C is 1200 R. Then, the specific heat of the gas at constant pressure is

(a) 0.5 R (b) 0.1 R

(c) 1.5 R (d) 2.5 R

41. In a parallel plate capacitor, the capacitance increases from 6μF to 60μF on introducing a dielectric medium between the plates. The dielectric constant of the medium is

(a) 5 (b) 10 (c) 15 (d) 20

42. If m is mass of electron, v its velocity, r the radius of stationary circular orbit around a nucleus with charge Ze, then from Bohr's first postulate, the kinetic energy $K = \frac{1}{2}mv^2$ of the electron in C.G.S. system is equal to

(a) $\frac{1}{2}\frac{Ze^2}{r}$ (b) $\frac{1}{2}\frac{Ze^2}{r^2}$

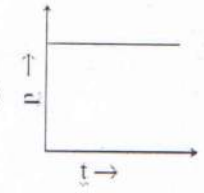
(c) $\frac{Ze^2}{r}$ (d) $\frac{Ze}{r^2}$

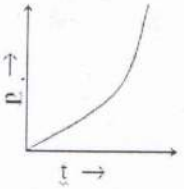
43. In a triode of amplification factor 20, the grid voltage is fixed at –2V. When the plate voltage is changed from 150 V to 200 V, the plate current is found to change from 30 mA to 40 mA. The plate resistance of the valve is

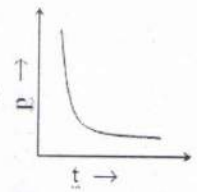
(a) $2\ k\Omega$ (b) $10\ k\Omega$

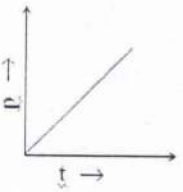
(c) $5\ k\Omega$ (d) $15\ k\Omega$

44. A constant force acts on a body. Which of the following correctly represents the variation of the power p developed with time t?

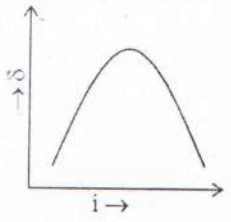
(a) 

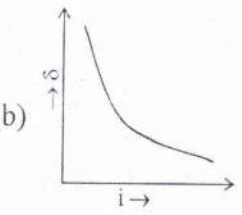
(b) 

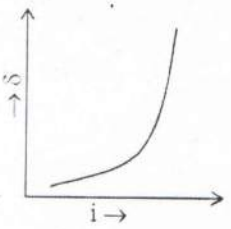
(c) 

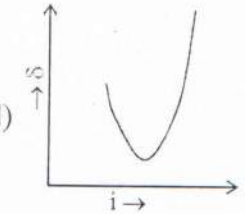
(d) 

45. The angle of deviation (δ) by a prism is measured for various angles of incidence (i) of monochromatic light. Which one of the graphs shown in the figure correctly represents the variation of δ with i?

(a) 

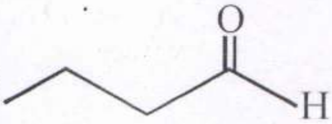
(b) 

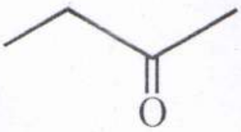
(c) 

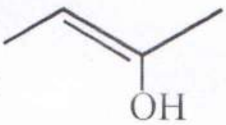
(d) 

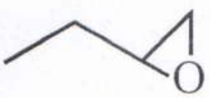
PART B : CHEMISY

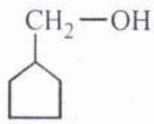
46. Which is not the functional isomer of the molecular formula C_4H_8O?

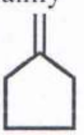
(a) 

(b) 

(c) 

(d) 

47. When  is heated with conc. H_2SO_4 at 443 K, the alkene formed is mainly

(a)  (b) 

(c)  (d) 

48. A sample of gas occupies 100 litres at 1 atm pressure and at 0°C. If the volume of the gas is to be reduced to 5 litres at the same temperature, what additional pressure must be applied ?

(a) 18 atm (b) 19 atm
(c) 21 atm (d) 10 atm

49. The equilibrium constant for the reaction,
$SO_2\ (g)\ \frac{1}{2}\ O_2\ (g) \rightleftharpoons SO_3(g)$ is 5×10^{-2} atm.
The equilibrium constant of the reaction
$2SO_3\ (g) \rightleftharpoons 2\ SO_2\ (g) + O_2\ (g)$ would be

(a) 100 atm (b) 200 atm
(c) 4×10^2 atm (d) 6.25×10^4 atm

50. Ethyl cyanide (A) can be converted to ethyl amine (B) by

(a) $A \xrightarrow{Sn/HCl} B$

(b) $A \xrightarrow{H_3O^+} \xrightarrow[\Delta]{NH_3} \xrightarrow[\Delta]{KBrO} B$

(c) $A \xrightarrow{LiAlH_4} B$

(d) both (a) and (c) are correct

51. Strongest base is

(a) $(H_2N)(H_2N)C{=}NH$

(b) $(H_2N)(H_2N)C{=}NH_2^{\oplus}$

(c) $(H_2N)(H_2N)C{=}O$

(d) $(H_2N)(H_2N)\overset{\oplus}{C}{=}OH$

52. Which is true about different forms of hydrogen?

(a)*Ortho* hydrogen has same spins of two nuclei clockwise or anticlockwise

(b)Para hydrogen has different spins of two nuclei

(c)At absolute zero, there is 100% para form and at high temperature, there is 75% ortho form

(d)All are correct

53. In which of the following crystals alternate tetrahedral voids are occupied ?
(a) NaCl (b) ZnS
(c) CaF_2 (d) Na_2O

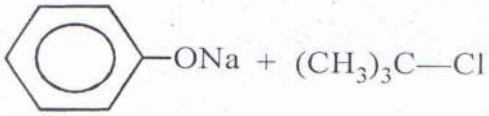
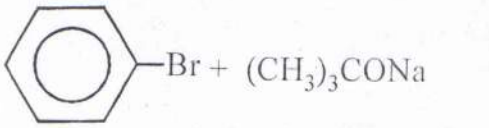
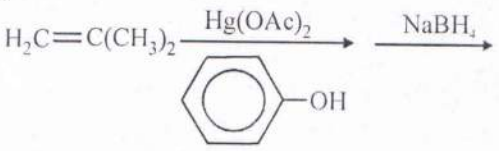
54. $2HI(g) \rightleftharpoons H_2(g) + I_2(g)$
The equilibrium constant of the above reaction is 6.4 at 300 K. if 0.25 mole each of H_2 and I_2 are added to the system, the equilibrium constant will be
(a) 6.4 (b) 0.8
(c) 3.2 (d) 1.6

55. In a reaction the ferrous (Fe^{++}) ion is oxidised to ferric (Fe^{+++}) ion. The equivalent weight of the ion in the above reaction is equal to
(a) Half of the atomic weight
(b) 1/5 of the atomic weight
(c) The atomic weight
(d) Twice the atomic weight

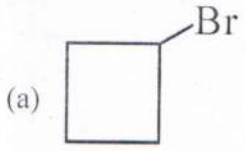
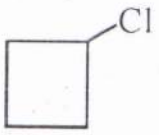
56. Two liquids A and B form an ideal solution. When total pressure of this solution is 600 torr, the amount fraction of A in the vapour phase is 0.35 and in liquid phase is 0.70. The vapour pressure of pure A is
(a) 300 torr (b) 1300 torr
(c) 200 torr (d) 400 torr

57. A weak electrolyte, AB, is 5% dissociated in aqueous solution. What is the freezing point of a 0.100 molal aqueous solution of AB ? K_f for water is 1.86 deg/molal.
(a) –3.8°C (b) –0.1953°C
(c) –1.7°C (d) – 0.78°C

58. In an ionic solid MX the radius of M^+ is 0.95 Å and that of X^- is 1.81 Å. The solid MX is likely to have
(a) Zinc blende structure
(b) Fluorite structure
(c) Cesium chloride structure
(d) Rock-salt structure

59. To prepare phenyl t-butyl ether, best synthesis is
(a) 
(b) 
(c) 
(d)None of the above

60. Which of the following is incorrect for glucose
(a) It contains four $-\underset{|}{C}HOH$ group
(b) It contains one ketone group
(c) It contains one – CH_2OH group
(d) It contains one – CHO group

61. 1-Bromo-3-chlorocyclobutane when treated with two equivalents of Na in the presence of ether results into
(a) 
(b) 
(c) 
(d) 

62. When sucrose is heated with conc. HNO_3 the product is
(a) sucrosenitrate (b) oxalic acid
(c)formic acid (d) citric acid

63. Identify X in the sequence ;
$$X \xrightarrow[2.H_2O/H^-]{1.CH_3MgCl} C_5H_{12}O \xrightarrow[575K]{Cu} C_5H_{10}$$
(a) $CH_3 - \underset{\underset{O}{\|}}{C} - CH_2 - CH_3$
(b) $CH_3CH_2CH_2CHO$

(c) $(CH_3)_2CHCHO$
(d) $CH_3CH_2CH_2CH_2OH$

64. At pH = 4, $Cr_2O_7^{2-}$ exists as
(a) CrO_4^{2-} (b) CrO_3
(c) CrO_2^{2+} (d) $Cr_2O_7^{2-}$

65. If 10g V_2O_5 is dissolved in acid and reduced to V^{2+} by treatment with zinc metal, how many moles of I_2 could be reduced by resulting V^{2+} solution, as it is oxidized to V^{4+}? (V = 51)

$$V_2O_5 + 10H^+ + 6e^- \longrightarrow 2V^{2+} + 5H_2O$$
$$V^{2+} + I_2 + H_2O \longrightarrow 2I^- + VO^{2+} + 2H^+$$

(a)0.02 (b) 0.11
(c)0.4 (d) 0.3

66. What is the activation energy for the decomposition of N_2O_5 as

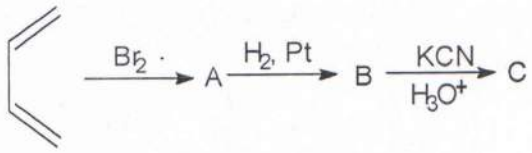
$$N_2O_5 \rightleftharpoons 2NO_2 + \frac{1}{2}O_2$$

If the values of the rate constants are 3.45×10^{-5} and 6.9×10^{-3} at 27°C and 67°C respectively.
(a) 102×10^2 kJ (b) 488.5 kJ
(c) 112 kJ (d) 112.5 kJ

67. Photochemical smog is related to pollution of
(a) Air (b) Water
(c) Soil (d) All the above

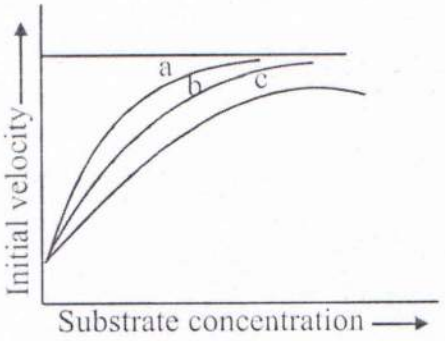
68. Gases referred to as "green house gases" are
(a) CO_2, O_2, NO_2, NH_3
(b) Chlorofluoro carbon, CO_2, NH_3, N_2
(c) CH_4, N_2, CO_2, NH_3
(d) Chlorofluoro carbon, CO_2, CH_4, NO_2

69. The end product of the reaction is



C is
(a) propanoic acid (b) adipic acid
(c) malonic acid (d) succinic acid

70. The figure given below shows three velocity-substrate concentration curves for an enzyme reaction. What do the curves a, b and c depict respectively ?

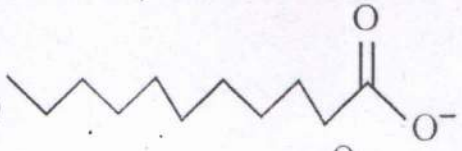


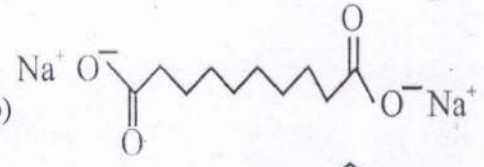
(a)a-normal enzyme reaction, b-competitive inhibition, c- non-competitive inhibition
(b)a-enzyme with an allosteric modulator added, b-normal enzyme activity, c-competitive inhibition
(c)a-enzyme with an allosteric stimulator, b-competitive inhibitor added, c-normal enzyme reaction
(d) a-normal enzyme reaction, b-non-competitive inhibitor added, c-allosteric inhibitor added.

71. The stabilization of the dispersed phase in a lyophobic sol is due to
(a)The viscosity of the medium
(b)The surface tension of the medium
(c)Liking for the medium
(d)The formation of an electrical layer between the two phases

72. partition coefficient of I_2 in CCl_4 and H_2O is 400 at a given temperature. 10 mL of CCl_4 solution containing 1 g I_2 is shaken with 0.4 L H_2O. I_2 extracted into water when equilibrium is attained will be
(a) $\frac{1}{11}$g (b) $\frac{10}{11}$g
(c) $\frac{1}{10}$g (d) $\frac{1}{9}$g

73. Which of the following molecules is most suitable to disperse benzene in water

(a) 

(b) 

(c) 

(d) 

74. The bond order of the species with molecular orbital configuration
$(\sigma\ 1s)^2\ (\sigma^*\ 1s)^2\ , (\sigma 2s)^2\ (\sigma^* 2s)^2\ (\sigma 2p_x)^1$
will be
(a) 3 (b) 1/2
(c) 2 (d) Zero

75. Transition element exhibit variable oxidation states because they release electrons from the following orbit
(a) (n – 1)d (b) (n – 1)d, s
(c) (n – 1) s, p, d (d) ns and (n – 1)d

76. When alumina is electrolysed in the presence of cryolite the gas liberated at graphite anode is
(a) CF_4 (b) F_2
(c) Cl_2 (d) O_2

77. Vapour pressure of chloroform ($CHCl_3$) and dichloromethane (CH_2Cl_3) at 25°C are 200mm Hg and 41.5 mm Hg respectively. Vapour pressure of the solution obtained by mixing 25.5 g of $CHCl_3$ and 40 g of CH_2Cl_2 at the same temperature will be:
(Molecular mass of $CHCl_3$ = 119.5 u and molecular mass of CH_2Cl_2 = 85 u)
(a) 285.5 mm Hg
(b) 173.9 mm Hg
(c) 615. 0 mm Hg
(d) 347.9 mm Hg

78. The Gibbs energy for the decomposition of Al_2O_3 at 500°C is as follows:
$\frac{2}{3}Al_2O_3 \rightarrow \frac{4}{3}Al + O_2;\quad \Delta_rG = +960kJ\ mol^{-1}$
The potential difference needed for the electrolytic reduction of aluminium oxide (Al_2O_3) at 500°C at least
(a) 5.0 V
(b) 4.5 V
(c) 3.0 V
(d) 2.5 V

79. Four successive members of the first series of the transition metals are listed below. For which one of them the standard potential ($E^0_{M^{2+}}/M$) value has a positive sign?
(a) Fe (Z = 26)
(b) Co (Z = 27)
(c) Ni (Z = 28)
(d) Cu (Z = 29)

80. Which of the following exhibits only +3 oxidation state?
(a) Pa
(b) U
(c) Th
(d) Ac

81. Molar conductivities (Λ^0_m) at infinite dilution of NaCl, HCl and CH_3COONa are 126.4, 425.9 and 91.0 S $cm^2\ mol^{-1}$ respectively. Λ^0_m for CH_3COOH will be:
(a) 390.5 S $cm^2\ mol^{-1}$
(b) 425.5 S $cm^2\ mol^{-1}$
(c) 180.5 S $cm^2\ mol^{-1}$
(d) 290.8 S $cm^2\ mol^{-1}$

82. In which of the following arrangements the given sequence is not strictly according to the property indicated against it?

(a) $CO_2 < SiO_2 < SnO_2 < PbO_2$: increasing oxidising power
(b) $HF < HCl < HBr < HI$: increasing acidic strength
(c) $H_2O < H_2S < H_2Se < H_2Te$: increasing pk_a values
(d) $NH_3 < PH_3 < AsH_3 < SbH_3$: increasing acidic character

83. Consider the reaction:
$RCHO + NH_2NH_2 \rightarrow RCH = N - NH_2$
What sort of reaction is it?
(a) Nucleophilic addition – elimination reaction
(b) Electrophilic addition – elimination reaction
(c) Free radical addition – elimination reaction
(d) Electrophilic substitution elimination reaction

84. During change of O_2 to O_2^- ion, the electron adds on which one of the following orbitals?
(a) σ orbital
(b) π^* orbital
(c) π orbital
(d) σ^* orbital

85. Standard reduction potentials of the half reactions are given below:
$F_{2(g)} + 2e^- \rightarrow 2F^-_{(aq)}$; $E^0 = +2.85$ V
$Cl_{2(g)} + 2e^- \rightarrow 2Cl^-_{(aq)}$; $E^0 = +1.36$ V
$Br_{2(g)} + 2e^- \rightarrow 2Br^-_{(aq)}$; $E^0 = +1.06$ V
$I_{2(g)} + 2e^- \rightarrow 2I^-_{(aq)}$; $E^0 = +0.53$ V
The strongest oxidising and reducing agents respectively are:
(a) Cl_2 and I_2
(b) F_2 and I^-
(c) Br_2 and Cl^-
(d) Cl_2 and Br^-

86. A hydrogen gas electrode is made by dipping platinum wire in a solution of HCl of pH = 10 and by passing hydrogen gas around the platinum wire at one atm pressure. The oxidation potential of electrode would be ?
(a) 0.059 V (b) 0.59 V
(c) 0.118 V (d) 1.18 V

87. Which of the following statements about the interstitial compounds is incorrect ?
(a) They retain metallic conductivity
(b) They are chemically reactive
(c) They are much harder than the pure metal
(d) They have higher melting points than the pure metal

88. Synthetic rubber Buna – S is
(a) Polymer of butadiene
(b) Polymer of isoprene
(c) Polymer of styrene only
(d) Polymer of butadiene and styrene

89. Phenols reacts with bromine in carbon disulphide at low temperature to give
(a) m – bromophenol
(b) o and p – bromophenol
(c) p – bromophenol only
(d) 2, 4, 6 – tribromophenol

90. Metal generally present in polluted air is
(a) Cadmium (b) Lead
(c) Mercury (d) Zinc

PART C : BIOLOGY

91. Antiseptics and disinfectants either kill or prevent growth of microrganisms. Identify which of the following statements is not true-
(a) A 0.2 % solution of phenol is an antiseptic while 1 % solution acts as a disinfectant
(b) Chlorine and Iodine are used as strong disinfectants
(c) Dilute solutions of boric acid and hydrogen peroxide are strong antiseptics
(d) Disinfectants harm the living tissues

92. Select the **wrong** statement :
(a) Isogametes are similar in structure, function and behavior
(b) Anisogametes differ either in structure, function of behaviour
(c) In Oomycetes female gamete is smaller and motile, while male gamete is larger and non-motile
(d) *Chlamydomonas* exhibits both isogamy and anisogamy and *Fucus* shows oogamy

93. Which one of the following is not a correct statement ?
(a) Herbarium houses dried, pressed and preserved plant specimens
(b) Botanical gardens have collection of living plants for reference
(c) A museum has collection of photographs of plants and animals
(d) Key is a taxonomic aid for identification of specimens

94. Isogamous condition with non-flagellated gametes is found in:
(a) *Chlamydomonas* (b) *Spirogyra*
(c) *Volvox* (d) *Fucus*

95. Besides paddy fields, cyanobacteria are also found inside vegetative part of :
(a) *Pinus* (b) *Cycus*
(c) *Equisetum* (d) *Psilotum*

96. Megasporangium is equivalent to :
(a) Embryo sac (b) Fruit
(c) Nucellus (d) Ovule

97. Read the following statements (A– E) and answer the question which follows them :
(A) In liverworts, mosses and ferns gametophytes are free-living
(B) Gymnosperms and some ferns are heterosporous
(C) Sexual reproduction in *Fucus*, *Volvox* and *Albugo* is oogameous
(D) The sporophytes in liverworts is more elaborate than that in mosses
(E) Both, *Pinus* and *Marchentia* are dioecious
How many of the above statements are correct ?
(a) One (b) Two
(c) Three (d) Four

98. Among bitter gourd, mustard, brinjal, pumpkin, china rose, lupin, cucumber, sunnhemp, gram, guava, bean,
chilli, plum, petunia, tomato, rose, withania,
potato, onion, aloe and tulip how many plants have hypogynous
flower ?
(a) Six (b) Ten
(c) Fifteen (d) Eighteen

99. Interfascicular cambium develops from the cells of :
(a) Medullary rays (b) Xylem parenchyma
(c) Endodermis (d) Pericycle

100. In china rose the flowers are :
(a) Actinomorphic, hypogynous with twisted aestivation
(b) Actinomorphic, epigynous with valvate aestivation
(c) Zygomorphic, hypogynous with imbricate aestivation
(d) Zygomorphic, epigynous with twisted aestivation

101. Lenticels are involved in
(a) Transpiration (b) Gaseous exchange
(c) Food transport (d) Photosynthesis

102. Age of a tree can be estimated by :
(a) Its height and girth (b) Biomass
(c) Number of annual rings
(d) Diameter of its heartwood

103. Transition state structure of the substate formed during an enzymatic reaction is
(a) Transient but stable
(b) Permanent but unstable
(c) Transient and unstable
(d) Permanent and stable

104. A phosphoglyceride is always made up of :
(a) Only a saturated fatty acid esterified to a glycerol molecule to which a phosphate group is also attached
(b) Only an unsaturated fatty acid esterified to a glycerol molecule to which a phosphate group is also attached
(c) A saturated or unsaturated fatty acid esterified to a glycerol molecule to which a phosphate group is also attached
(d) A saturated or unsaturated fatty acid esterified to a phosphate group which is also attached to a glycerol Molecule

105. Pigment-containing membranous extensions in some cyanobacteria are
(a) Heterocysts (b) Basal bodies
(c) Pneumatophores
(d) Chromatophores

106. A major site for synthesis of lipids is :
(a) RER (b) SER
(c) Symplast (d) Nucleoplasm

107. The complex formed by a pair of synapsed homologous chromosomes is called :
(a) Equatorial plate (b) Kinetochore
(c) Bivalent (d) Axoneme

108. During seed germination its stored food is mobilized by :
(a) Ethylene (b) Cytokinin
(c) ABA (d) Gibberellin

109. Which of the following criteria does not pertain to facilitated transport ?
(a) Requirement of special membrane proteins
(b) High selectivity
(c) Transport saturation
(d) Uphill transport

110. Which of the metabolites is common to respiration mediated breakdown of fats, carbohydrates and proteins ?
(a) Glucose-6-phosphate
(b) Fructose1, 6-bisphosphate
(c) Pyruvic acid
(d) Acetyl CoA

111. Which one of the following statements is correct ?
(a) Hard outer layer of pollen is called intine
(b) Sporogenous tissue is haploid
(c) Endothecium produces the microspores
(d) Tapetum nourishes the developing pollen

112. Product of sexual reproduction generally generates :
(a) Longer viability of seeds
(b) Prolonged dormancy
(c) New genetic combination leading to variation
(d) Large biomass

113. Meiosis takes place in :
(a) Meiocyte (b) Conidia
(c) Gemmule (d) Megaspore

114. Perisperm differs from endosperm in :
(a) Being a haploid tissue
(b) Having no reserve food
(c) Being a diploid tissue
(d) Its formation by fusion of secondary nucleus with several sperms

115. Which of the following statements is not true of two genes that show 50% recombination frequency ?
(a) The genes may be on different chromosomes
(b) The genes are tightly linked
(c) The genes show independent assortment

(d) If the genes are present on the same chromosome, they undergo more than one crossovers in every meiosis.

116. Variation in gene frequencies within populations can occur by chance rather than by natural selection. This is referred to as :
(a) Genetic flow (b) Genetic drift
(c) Random mating (d) Genetic load

117. If two persons with 'AB' blood group marry and have sufficiently large number of children, these children could be classified as 'A' blood group : 'AB' blood group : 'B' blood group in 1 : 2 : 1 ratio. Modern technique of protein electrophoresis reveals presence of both 'A' and 'B' type proteins in 'AB' blood group individuals. This is an example of :
(a) Codominance (b) Incomplete dominance
(c) Partial dominance (d) Complete dominance

118. The process by which organisms with different evolutionary history evolve similar phenotypic adaptations in response to a common environmental challenge is called :
(a) Natural selection
(b) Convergent evolution
(c) Non-random evolution
(d) Adaptive radiation

119. The tendency of population to remain in genetic equilibrium may be disturbed by :
(a) random mating
(b) lack of migration
(c) lack of mutations
(d) lack of random mating

120. Which of the following Bt crops is being grown in India by the farmers ?
(a) Maize (b) Cotton (c) Brinjal (d) Soybean

121. A good product of citric acid is :
(a) *Aspergillus* (b) *Pseudomonas*
(c) *Clostridium* (d) *Saccharomyces*

122. DNA fragments generated by the restriction endonucleases in a chemical reaction can be separated by :
(a) Centrifugation
(b) Polymerase chain reaction
(c) Electrophoresis
(d) Restriction mapping

123. Which of the following is not corretly matched for the organism and its cell wall degrading enzyme ?
(a) Bacteria-Lysozyme (b) Plant cells- Cellulase
(c) Algae-Methylase (d) Fungi - Chitinase

124. The colonies of recombinat bacteria appear white in contrast to blue colonies of non-recombinant bacteria because of :
(a) Non-recombinant bacteria containing betagalactosidase
(b) Insertional inactivation of alphagalactosidase in non-recombinant bacteria
(c) Insertional inactivation of alphagalactosidase in recombinant bacteria
(d) Inactivation of glycosidase enzyme in recombinant bacteria

125. Which of the following are likely to be present in deep sea water ?
(a) Archaebacteria (b) Eubacteria
(c) Blue-green algae (d) Saprophytic fungi

126. Natural reservoir of phosphorus is :
(a) Sea water (c) Animal bones
(c) Rock (d) Fossils

127. Secondary productivity is rate of formation of new organic matter by :
(a) Producer (b) Parasite
(c) Consumer (d) Decomposer

128. Which one of the following is not used for *ex situ* plant conservation?
(a) Field gene banks (b) Seed banks
(c) Shifting cultivation (d) Botanical Gardens

129. Kyoto-Protocol was endorsed at :
(a) CoP-3 (b) CoP-5 (c) CoP-6 (d) CoP-4

130. Which of the following represent maximum number of species among global biodiversity ?

(a) Algae (b) Lichens
(c) Fungi (d) Mosses and Ferns

131. The Golgi complex plays a major role :
(a)in trapping the light and transforming it into chemical energy
(b) in digensting proteins and carbohydrates
(c) as energy transferring organelles
(d) in post translational modification of proteins and glycosidation of lipids

132. Macro molecule chitin is :
(a) nitrogen containing polysaccharide
(b) phosphorus containing polysaccharide
(c) sulphur containing polysaccharide
(d) simple polysaccharide

133. The essential chemical components of many coenzymes are :
(a) Proteins (b) Nucleic acids
(c) Carbohydrates (d) Vitamins

134. A pregnant female delivers a baby who suffers from stunted growth, mental retardation, low intelligence
quotient and abnormal skin.
This is the result of :
(a) Deficiency of iodine in diet
(b) Low secretion of growth hormone
(c) Cancer of the thyroid gland
(d) Over secretion of pars distalis

135. Select the correct statement with respect to locomotion in humans :
(a) A decreased level of progesterone causes osteoporosis in old people.
(b) Accumulation of uric acid crystals in joints causes their inflammation.
(c) The vertebral column has 10 thoracic vertebrae.
(d) The joint between adjacent vertebrae is a fibrous joint.

136. Which of the following statements is correct in relation to the endocrine system ?
(a) Adenohypophysis is under direct neural regulation of the hypothalamus
(b) Organs in the body like gastrointestinal tract, heart, kidney and liver do not produce any hormones
(c) Non-nutrient chemicals produced by the body in trace amount that act as intercellular messenger are
known as hormones
(d) Releasing and inhibitory hormones are produced by the pituitary gland

137. What is the correct sequence of sperm formation ?
(a) Spermatid, spermatocyte, spermatogonia, spermatozoa
(b) Spermatogonia, spermatocyte, spermatozoa, spermatid
(c) Spermatogonia, spermatozoa, spermatocyte, spermatid
(d) Spermatogonia, spermatocyte, spermatid, spermatozoa

138. Menstrual flow occurs due to lack of :
(a) Progesterone (b) FSH
(c) Oxytocin (d) Vasopressin

139. Which one of the following is not the function of placenta ? it :
(a) facilitates supply of oxygen and nutrients to embryo
(b) secretes estrogen
(c) Facilitates removal of carbon dioxide and waste material from embryo
(d) Secretes oxytocin during parturition

140. One of the legal methods of birth control is :
(a) abortion by taking an appropriate medicine
(b) by abstaining from coitus from day 10 to 17 of the menstrual cycle
(c) by having coitus at the time of day break
(d) by a premature ejaculation during coitus

141. Which of the following cannot be detected in a developing foetus by amniocentesis ?
(a) Klinefelter syndrome
(b) Sex of the foetus
(c) Down syndrome
(d) jaundice

142. Artificial insemination means :
(a) transfer of sperms of a healthy donor to a test tube containing ova
(b) transfer of sperms of husband to a test tube containing ova
(c) artificial introduction of sperms of a healthy donor into the vagina
(d) introduction of sperms of a healthy donor directly into the ovary

143. Which mendelian idea is depicted by a cross in which the F1 generation resembles both the parents ?
(a) incomplete dominance (b) law of dominance
(c) inheritance of one gene (d) co-dominance

144. The incorrect statement with regard to Haemophilia is :
(a) It is a sex-linked disease
(b) It is a recessive disease
(c) It is a dominant disease
(d) A single protein involved in the clotting of blood is affected

145. If both parents are carriers for thalessemia, which is an autosomal recessive disorder, what are the chances of pregnancy resulting in an affected child ?
(a) no chance (b) 50%
(c) 25% (d) 100%

146. According to Darwin, the organic evolution is due to -
(a) Intraspecific competition
(b) Interspecific competition
(c) Competition within closely related species
(d) Reduced feeding efficiency in one species due to the presence of interfering species.

147. The eye of octopus and eye of cat show different patterns of structure, yet they perform similar function, This
(a) is an example of :
(b) Homologous organs that have evolved due to convergent evolution
(c) Homologous organs that have evolved due to divergent evolution
(c) Analogous organs that have evolved due to convergent evolution
(d) Analogous organs that have evolved due to divergent evolution

148. Infection of *Ascaris* usually occurs by :
(a) drinking water containing eggs of *Ascaris*
(b) eating imperfectly cooked pork
(c) Tse-tse fly (d) mosquito bite

149. The cell-mediated immunity inside the human body is carried out by :
(a) T- lymphocytes (b) B-lymphocytes
(c) Thrombocytes (d) Erythrocytes

150. In plant breeding programmes, the entire collection (of plants/seeds) having all the diverse alleles for all genes in a given crop is called :
(a) selection of superior recombinants
(b) cross-hybridisation among the selected parents
(c) evaluation and selection of parents
(d) germplasm collection

151. During sewage treatment, biogases are produced which include :
(a) methane, hydrogensulphide, carbon dioxide
(b) methane, oxygen, hydrogensulphide
(c) hydrogensulphide, methane, sulphur dioxide
(d) hydrogensulphide, nitrogen, methane

152. A biologist studied the population of rats in a barn, He found that the average natality was 250, average mortality 240, immigration 20 and emigration 30. The net increase in population is :
(a) 10 (b) 15 (c) 05 (d) zero

153. Which one of the following processes during decomposition is correctly described ?
(a) Fragmentation –Carried out by organisms such as earthworm
(b) Humification – Leads to the accumulation of a dark coloured substance humus which undergoes microbial action at a very fast rate

(c) Catabolism – Last step in the decomposition under fully anaerobic condition
(d) Leaching – Water soluble inorganic nutrients rise to the top layers of soil

154. A sedentary sea anemone gets attached to the shell lining of hermit crab. The association is :
(a) Ectoparasitism (b) Symbiosis
(c) Commensalism (d) Amensalism

155. Global warming can be controlled by :
(a) Reducing deforestation, cutting down use of fossil fuel
(b) Reducing reforestation, increasing the use of fossil fuel
(c)mIncreasing deforestation, slowing down the growth of human population
(d) Increasing deforestation, reducing efficiency of energy usage

156. The Air Prevention and control of pollution Act came into force in :
(a) 1975 (b) 1981
(c)1985 (d) 1990

157. The larva of *Ascaris* circulate in the body of man
(a) Intestine–Liver–Trachea–Lungs–Intestine
(b) Intestine–Heart–Lungs–Trachea– Intestine
(c) Intestine –Liver –Heart –Lungs–Intestine
(d) Intestine– Lungs–Liver– Trachea– Intestine

158. Photosynthetic bacteria have both PS–I and PS–II is
(a) Green sulphur bacteria.
(b) Purple sulphur bacteria.
(c) Purple nonsulphur bacteria.
(d) Cyanobacteria.

159. "Wobble effect" is
(a)Control of protein synthesis in eukaryotes.
(b)Degeneracy of genetic code.
(c)Lack of precision with regard to third base in the codon and anticodon.
(d)Instability of DNA when heated.

160. Largest tiger population is found in
(a) Sunderban national park
(b) Corbett national park
(c) Ranthambhor national park
(d) Kanha national park

161. Which of the following statement about human sperm is correct ?
(a) Acrosome has a conincal pointed structure used for piercing and penetrating the egg, resulting in fertilization
(b) the sperm lysins in the acrosome dissolve the egg envelope facilitating fertilization
(c) Acrosome serves as a sensory structure leading the sperm towards the ovum
(d) Acrosome serves no particular function

162. Which of the following represents the correct molecular formula of chlorophyll-b?
(a) $C_{55}H_{72}O_6N_4Mg$
(b) $C_{55}H_{72}O_5N_4Mg$
(c) $C_{55}H_{72}O_4N_4Mg$
(d) $C_{55}H_{70}O_6N_4Mg$

163. Balanced diet should have approximately:
(a)1/5 proteins, 3/5 fats and 1/5 carbohydrates.
(b)3/5 proteins, 1/5 fats and 1/5 carbohydrates.
(c)1/5 proteins, 1/5 fats and 3/5 carbohydrates.
(d)1/2 proteins, 1/4 fats and 3/5 carbohydrates.

164. Whose experiments cracked the DNA and discovered unequivocally that a genetic code is a triplet?
(a) Nirenberg and methaei
(b) Hershey and Chase
(c) Morgan and Strutevant
(d) Beadle and Tatum

165. List of endangered species was released by
(a) IUCN (b) BBC
(c) WCC (d) UN

166. Enzymes catalyse a reaction in
(a) forward direction
(b) backward direction

167. The substrate concentration at which an enzyme attains half its maximum velocity, is called
(a) Threshold value
(b) Half life
(c) Michaelis-Menten constant
(d) Concentration coefficient

168. In osmosis, there is movement of
(a) solute only
(b) solvent only
(c) Both (a) and (b)
(d) neither solute nor solvent

169. A hormone that control closure of stomata in response to water stress is
(a) Cytokinin (b) Gibberallins
(c) Auxin (d) Abscisic acid

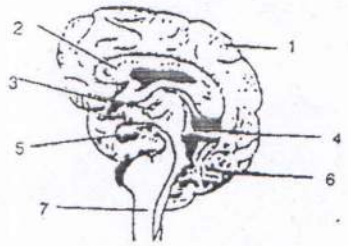
170. ADP → ATP reaction occurs, when two protons (H^+) are passed from
(a) thylakoid to cytosol
(b) thylakoid to lumen
(c) lumen of thylakoid to stroma
(d) stroma to thylakoid lumen

171. The rate of growth of any organism follows
(a) Hyperbola curve (b) J-shaped curve
(c) Sigmoid curve (d) Parabola curve

172. The combination of auxin and cytokinin which is likely to induce shoot differentiation in tobacco callus is:
(a) Only auxin and no cytokinin.
(b) Only cytokinin and no auxin.
(c)Higher concentration of auxin lower concentration of cytokinin.
(d)Higher concentration of cytokinin and lower concentration of auxin.

173. The main point of difference between DNA and RNA is
(a) Presence of thymine in DNA and RNA
(b) Presence of deoxyribose and thymine in DNA, ribose and uracil in RNA
(c) Presence of ribose and thymine in DNA, deoxybribose and uracil in RNA
(d) Presence of deoxyribose in DNA and ribose in RNA

174. In the diagram of section of brain given below, different parts are indicated by alphabets. Choose the answer in which these alphabets have been correctly matched with the parts these indicate:



(a) **1**-Cerebral hemisphere, **2**-Corpus callosum, **3**-Thalamus, **4**-Pineal gland, **5**-Cerebellum, **6**-Pituitary, **7**-Medulla oblongata.
(b) **1**-Cerebral hemisphere, **2**-Thalamus, **3**-Corpus callosum, **4**-Pineal gland, **5**-Pituitary, **6**-Medulla oblongata., **7**- Cerebellum.
(c) **1**-Corpus callosum, **2**-Cerebral hemisphere, **3**-Pituitary, **4**-Pineal gland, **5**-Thalamus.
(d) **1**-Cerebral hemisphere, **2**-Corpus callosum, **3**-Thalamus, **4**-Pineal gland, **5**-Pituitary, **6**-Cerebellum, 7-Medulla oblongata.

175. Nitrogen oxides produced from the emission of automobiles and power plants are the source of fine air borne particles which lead to
(a) photochemical smog
(b) dry acid deposition
(c) industrial smog
(d) wet acid deposition

176. Serum is
(a) blood without fibrinogen
(b) lymph without corpuscles
(c) blood without corpuscles and fibrinogen
(d) lymph

177. The living organisms can be unexceptionally distinguished from the non –living things on the basis of their ability for
(a) responsiveness to touch
(b) interaction with the environment and progressive evolution
(c) reproduction
(d) growth and movement

178. When the oxygen supply to the tissue is inadequate, the condition is
(a) hypoxia (b) asphyxia
(c) pleuracy (d) anoxia

179. What will be the gameetic chromosome number of a cel, is somatic cell have 40 chromosomes ?
(a) 10 (b) 20
(c) 30 (d) 40

180. Which of the following two hormones are essential for induced breeding of fishes ?
(a) TSH and ACTH
(b) Oestrogen and progesterone
(c) FSH and LH
(d) Vasopressin and oxytocin